RESUMO - CONTROLE E MONITORAMENTO DE CARGA DE TREINAMENTO

CAN TRAINING IN LARGE- AND MEDIUM-SIDED GAMES REPRODUCE THE MOST DEMANDING PERIODS OF PLAYER LOAD™ DURING OFFICIAL MATCHES IN PROFESSIONAL SOCCER PLAYERS? A POSITIONAL ANALYSIS

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INTRODUCTION: Soccer is an intermittent sport that combines high- and low-intensity periods, and some Positional Global Systems (GPS) metrics, such as Player Load™ (sum of triaxial accelerations), were utilized to quantify acceleration actions to load control and training prescription. However, utilizing only average values may underestimate the most demanding periods of matches, making it necessary to assess whether the training replicates the game. OBJECTIVE: Verify if training in large- and medium-sided games reproduces the most demanding periods of Player Load™ during official matches in professional soccer players by position. METHODS: 23 soccer players of an elite Brazilian team participated in this study (177.8 ± 4.6 cm; 76.6 ± 4.1 kg; 29.7 ± 4.2 years; number: central defenders [CD] = 4; full-backs [FB] = 6; midfielders [MD] = 7; side forwards [SF] = 4; central forwards [CF] = 2). We

collected Player Load™ 10-Hz GPS (Catapult Vector S7, Catapult Innovations, Melbourne, Austrália) data from 57 official matches and 91 small-sided games (SSGs) from the 2024 season. The SSGs were classified as large- (SSGl; > 175 m²/player; n = 35) and medium-sided games (SSGm; 73,6 - 175 m²/player; n = 56). A rolling average method was applied to extract the 1-minute (MDP1), 3-minute (MDP3), and 5-minute (MDP5) most demanding periods data from official matches, SSGl, and SSGm using Python. Generalized linear mixed models (GLMM) with pitch size and player position as fixed-effects and athletes as random-effects were utilized to compare each SSGl, SSGm, and official matches MDPs durations utilizing the glmmTMB R package. A type III Wald chi-square test was applied in GLMMs to identify potential differences, with $P < 0.05$ considered significant. If shown, estimated marginal means (emmeans) with Tukey post-hoc tests were utilized to specify where they occurred. The percentage of MDPs values for each pitch size was calculated in relation to those obtained in official matches. Marginal (mR^2GLMM) and conditional (cR^2GLMM) pseudo-R-squareds were calculated to determine the proportion of variation explained by the fixed-effects and entire model, respectively. The analysis was performed in RStudio (version 2023.04.0). RESULTS: All positions showed differences across the MDP1 (CD: 53.7 %; FB: 55.1 %; MD: 56.9 %; SF: 57.3 %; CF: 55.7 %), MDP3 (CD: 53.2 %; FB: 54.5 %; MD: 56.1 %; SF: 56.4 %; CF: 54.9 %), and MDP5 (CD: 52.6 %; FB: 53.8 %; MD: 55.3 %; SF: 55.4 %; CF: 54.1 %) in SSGl and MDP1 (CD: 52.5 %; FB: 53.1 %; MD: 52.4 %; SF: 53.8 %; CF: 54.0 %), MDP3 (CD: 51.8 %; FB: 52.4 %; MD: 51.6 %; SF: 52.8 %; CF: 53.2 %) and MDP5 (CD: 51.2 %; FB: 51.6 %; MD: 50.8 %; SF: 51.9 %; CF: 52.4 %) in SSGm compared to respective Official Match MDPs ($P < 0.001$; MDP1: $mR^2GLMM = 0.597$; $cR^2GLMM = 0.702$; MDP3: $mR^2GLMM = 0.602$; $cR^2GLMM = 0.704$; MDP5: $mR^2GLMM = 0.607$; $cR^2GLMM = 0.706$). CONCLUSION: SSGl and SSGm do not replicate the Player Load™ most demanding periods during official matches in professional soccer players.

Palavras-chave: peak-periods; worst-case scenario; most-demanding passage; workload; performance; team sport.